

as it goes, only reveals the enterprise and sagacity of a far-seeing man of business; but his subsequent work for the West Indies shows a different side to his character.

The sugar-bounty system had crippled the sugar-industry in the West Indies, and there was much distress amongst the planters and population. In 1896 Mr. Chamberlain sent out a Royal Commission to report on the position, and I willingly assented to the Assistant Director, now Sir Daniel Morris, accompanying it as scientific adviser. I sat one evening under the gallery of the House of Commons to hear Mr. Chamberlain make an eloquent appeal for a subsidy in aid of the distressed colonies. It was passed without demur. But something more than temporary aid was needed, and in 1898 Morris left Kew on his appointment as Imperial Commissioner of Agriculture in the West Indies. On the eve of his departure, happening to be at the Colonial Office, I was told that it was desired to get in touch with Alfred Jones. At that time I had never even seen him, but I invited him by telegraph to meet Morris and the Colonial Office men at dinner. That night the Direct Line was virtually agreed upon. As Jones left he remarked to me that the dinner had only cost him a quarter of a million. Later on he wrote that he was having steamers built in every available yard in the kingdom. At a semi-official gathering this year, the last time I saw him, Jones remarked that the dinner was still not paid for. But throughout his object was not limited to commercial success. He wanted to do for the West Indies what he had done for the Canaries. Morris, by botanical stations and agricultural instructors, sought to turn the negroes into peasant cultivators; Jones to provide an outlet for the produce. But he did much more, and in order to attract tourists he took the defunct hotel industry in Jamaica into his own hands.

Jones was, of course, a man of business, but in no ordinary sense. Commercial success was necessary to him as a justification of his plans, but I think still more as supplying means for extending them. It is no affectation to say that he, of all men, thought imperially. To knit the interests of the home country, and not least of Liverpool, with those of our colonial possessions was the real aim of his life. He offered the Rhodes scholars a free passage from any port at which his ships were available, and one of his latest schemes was to send out parties of undergraduates to make the personal acquaintance of the West Indies. On his last visit to them he took out a large number of distinguished guests. The event was tragic: in the earthquake Sir James Ferguson was killed in the street, and Jones himself was only extricated from the ruins of a falling hotel by little short of a miracle. It may be feared that the strain and shock left effects which were unperceived at the time.

But two other even greater achievements must be mentioned. In 1890-1 I had succeeded in getting the cultivation of cotton experimentally tested in West Africa, and had had samples grown there valued at Manchester. But there the thing ended; it required a more vigorous impulse than mere demonstration. Jones habitually projected his ideas into the future. He saw that cotton-growing in the United States was limited by physical conditions, and could not be extended; that Indian cotton, for reasons too long to explain, was not available; and that the amount which the United States could spare must be a constantly diminishing quantity. He saw that fresh and independent supplies must be found. He virtually started the British Cotton-growing Association, and helped it to raise large funds, amounting to some quarter of a million. Jones possessed the electric power of stimulating more sluggish temperaments. With

Morris's aid, cotton-growing was successfully re-established in the West Indies. Jones pushed it for all he was worth in West Africa, and Northern Nigeria promises to be the greatest cotton-growing area in the world.

The importance of this achievement, however, shrinks before that which was perhaps the most remarkable of all. So far as I know, Jones had no scientific training; but he had a fixed belief in the value of scientific knowledge. There are plenty of business men who are ready, so to speak, to pluck the pear when it is ripe, careless who grew it. But Jones looked confidently to scientific method to help on the solution of unsolved problems. If commerce was to be carried on with tropical countries, it must be possible for Europeans to live in them. From his point of view it was not sufficient to treat the local diseases; it was necessary to trace them to causes which could be obviated. He therefore, in perfectly simple faith, founded and endowed the Liverpool School of Tropical Medicine, and sent out one scientific expedition after another to investigate on the spot. Cattle rearing in the West Indies is hampered by diseases which are transmitted by "ticks." Jones sent out Prof. Newstead to study their life-history; he saw that if you could control the tick you could master the disease. But you cannot control the tick until you know everything about it. I could give a striking illustration of a more futile procedure by our own Board of Agriculture.

Jones had, in fact, the true scientific instinct. He knew nothing about science, but he thoroughly believed in the validity of its methods. It is for this reason that he deserves commemoration in these pages. There are probably men like him in America; they are certainly rare in this country; Mond may have been one, but then he was not of English birth.

As I have said, I did not know Jones intimately, and I have therefore been able to write of what he did only as I saw it from outside. He lived a strenuous life, and was a man of few words. The *Times* speaks in terms which I can well believe of his private generosity. I wrote to him on behalf of an orphan boy of promise in the village from which I write. Jones would promise nothing; but the boy got the post he desired in the engine-room of one of his ships.

Jones was a Welshman, and therefore, I suppose, a Celt. Perhaps to this he owed the buoyant optimism and that quality of imagination which is the primary element of success in science as in business. The great enterprises which he started probably possess sufficient momentum to continue; but the resourceful directing spirit is extinguished, and it is a national loss. He was not without honours amongst his own people in Lancashire. In 1901 he was created K.C.M.G. for his colonial services. But the distinction he most deeply prized was his election, without academic standing, as an honorary fellow of Jesus College, Oxford, a recognition which scarcely honoured the electors less than the recipient.

W. T. THISELTON-DYER.

NOTES.

WE regret to announce the death, on December 18, at Weybridge, of Dr. Shelford Bidwell, F.R.S., in his second-second year.

THE council of the Linnean Society has decided to devote the next meeting, on January 20, to a discussion on the origin of vertebrates, in which it is expected that Dr. Gaskell, Dr. Gadown, Mr. Goodrich, Prof. Starling, Prof. MacBride, Dr. Smith Woodward, and Prof. Dendy will take part.

THE University of Paris has been authorised, we learn from the *Revue scientifique*, to accept the gift made last June by M. Henry Deutsch. The gift, which amounts to 500,000 francs, and yields an income of 15,000 francs, is to be devoted to the inauguration of an aërotechnical institute for the encouragement of research, having for its object the perfecting of machines for aërial navigation. The institute is to be established at the St. Cyr School, and it is hoped that it will be opened in May next.

THE inaugural meeting of the Nature Photographic Society was held at the Institute of Science, Art, and Literature, Leeds, on December 11, Mr. J. J. Ward presiding. The primary object of the society is to form a fellowship among nature photographers in all parts of the world. The president is Mr. Richard Kearton, and the vice-presidents are Messrs. J. J. Ward, F. Martin-Duncan, H. Irving, and O. G. Pike. The secretary is Mr. Carl Edwards, Woodlesford, Leeds, who will be glad to supply particulars to all who are interested in the work of the society.

WE learn with regret that Dr. Enrico Hillyer Giglioli, professor of zoology and director of the Royal Zoological Museum in Florence, died on December 16 after a short illness. Dr. Giglioli was commendatore of the Order dei Santi Maurijis e Lazzaro and of the Corona d'Italia, commandeur of the Franz Joseph Order and of the Mérite agricole, officer of the Instruction publique de France and of the Brazilian Order of the Rose. He was born in London on June 13, 1845, and completed his studies in Pisa in the year 1864. The following year he made a voyage of exploration on the Royal ship *Magenta*. In 1869 he was called to the University of Florence, where he was made extraordinary professor in 1871, and ordinary professor three years later. In 1896 he founded the collection of the Italian vertebrates, and later he published his "*Avifauna italica*," which reached its second edition in the year 1906. On December 20 Prof. Giglioli would have celebrated his fortieth year of teaching; and his death a few days before this proposed celebration has deprived his colleagues, friends, and pupils of the anticipated pleasure of offering him their congratulations upon his work. By the death of Prof. Giglioli one of the leaders of zoology, ornithology, and anthropology in Italy has passed into silence.

MR. OTTO BEIT has made a munificent gift of 215,000*l.* for the foundation and endowment of medical research scholarships as a memorial to his brother, the late Mr. Alfred Beit. It may be remembered that some time ago Mr. Alfred Beit provided by his will the sum of 50,000*l.* toward the establishment of an institute of medical sciences. Owing to various circumstances the proposed formation of this institute was abandoned, and the moneys subscribed were returned to the donors or their executors. Mr. Otto Beit has now increased the sum thus received by him as his brother's residuary legatee to 215,000*l.*, which will yield by investment in trustee stocks an annual income of about 7500*l.* In his letter to the Senate of the University of London announcing this generous gift, Mr. Beit asks that the fund shall be named "The Beit Memorial Fellowships for Medical Research," and shall be devoted entirely to the furthering of medical research work in all its branches; or, as the deed of foundation states, "to promote the advancement by means of research of medicine and the allied sciences in their relation to medicine." Each fellowship is to be of the value of 250*l.* a year for three years, and "any man or woman of European descent, graduate of any approved university within the British Empire," will be eligible for election.

The fund will be administered by a board of trustees consisting of Viscount Milner, Lord Curzon, Mr. R. B. Haldane, the principal of the University of London (*ex officio*), Mr. Otto Beit, Dr. J. K. Fowler, and Mr. B. F. Hawksley. The advisory board must consist of not fewer than five or more than seven men, all of whom must be members of the medical profession. The first members of the board are Sir T. Clifford Allbutt, K.C.B., F.R.S., Prof. J. Rose Bradford, F.R.S., Dr. J. K. Fowler, Dr. C. J. Martin, F.R.S., Prof. W. Osler, F.R.S., and Prof. E. H. Starling, F.R.S. The first election to the fellowships will take place on or before March 1, 1910, and on or about January 1 of each subsequent year. Except in special cases, the fellows may undertake research only at recognised places in London, so that the work to be promoted by the benefaction will be mainly carried out in institutions connected with the University of London.

WHEN Dr. F. A. Cook returned from north polar regions four months ago and announced that he reached the North Pole on April 21, 1908, we expressed the hope that the observations of position and narrative of the journey would be published at an early date, so that the value of the claim could be decided definitely. In the absence of documentary evidence of this kind, the explorer's statements had to be accepted provisionally, but judgment upon them was reserved. At last the material upon which the claim to have reached the North Pole is based has been submitted to a committee of Copenhagen University appointed to investigate the records of Dr. Cook's journey. The conclusion arrived at by the committee is that the documents are altogether insufficient to prove the attainment of the highest northern latitude. A Reuter message from Copenhagen on December 21 states that the papers submitted to the committee for investigation were:— (1) A type-written report by Mr. Lonsdale on Dr. Cook's Arctic voyage, consisting of sixty-one folios. (2) A type-written copy of sixteen folios, made by Mr. Lonsdale, comprising the note-books brought back by Dr. Cook from his journey, and covering the period from March 18 to June 13, 1908, stated to have been written on the way from Svartevaag to the Pole and back until a place west of Heibergsland was reached. The committee points out, as a result of its investigations, that the afore-mentioned report of the journey is essentially identical with that published some time ago in the *New York Herald*, and that the copy of the note-books did not contain astronomical records, but only results. In fact, the committee remarks that there are no elucidatory statements which might have rendered it probable that astronomical observations were really taken. Neither is the practical side, namely, the sledge journey, illuminated by details in such a way as to enable the committee to form an opinion. The committee therefore considers that from the material submitted no proof can be adduced that Dr. Cook reached the North Pole. The council of the University accordingly declares as a result of the committee's report that the documents submitted to Copenhagen University contain no observations or explanations to prove that Dr. Cook on his last polar journey reached the North Pole.

THE December number of the *Entomologist's Monthly Magazine* contains announcements of several additions to the British insect-fauna, among the most interesting of which is the brachelytrous beetle *Proteinus crenulatus*, obtained by Dr. D. Sharp at Netley Bridge in 1906, and again in 1907. In Spry and Shuckard's "*British Coleoptera*" three of the five European species are recorded as British; Dr. Sharp has been enabled to include the whole five in our fauna.

ACCORDING to the report for 1908-9, the committee of the Leicester Museum and Art Gallery has sanctioned large and important additions to the buildings under its charge. The additions include a new entrance-hall, an extension of the main building, with the conversion of the greater portion of the ground-floor into a central hall, the replacement of the first floor by a gallery, and the construction of a new staircase. It is also proposed to erect and equip suitable work-rooms, to build a new wing on the west side of the present structure, and to devote the room now containing invertebrates to art purposes.

CIRCULAR No. 113 of the Entomological Bureau of the U.S. Department of Agriculture is devoted to the chinch-bug (*Blissus leucopterus*) and its ravages. No other insect indigenous to the western hemisphere has spread its devastating hordes over a wider tract than has this species, and were it not for the destruction of the larvæ by heavy rains, and, in a less degree, the diminution in its numbers by the attacks during the rainy season of a parasitic fungus, continuous corn-growing in many parts of the United States would have long since become impracticable owing to this insect. The present circular, after giving a detailed and illustrated account of the insect in its various developmental phases, summarises the history of its periods of greatest increase and its gradual spread, concluding with a description of the various methods which have been proposed to check and control its increase.

Nos. 1704 and 1705 of the Proceedings of the U.S. National Museum are devoted to molluscs, the first of these containing an account, by Mr. W. H. Dall, of a collection of marine shells from Peru, with a summary of the littoral marine mollusca of the Peruvian zoological province, while in the second Mr. P. Bartsch describes four new species of Philippine land-shells. In connection with the Peruvian province, Mr. Dall directs special attention to the unusual prevalence of black, blackish, or lurid colouring among the molluscs, this being particularly noticeable in the phytophagous group. It has been attempted to explain this phenomenon, which has long been known, by the suggestion that it is correlated with the presence of the vast beds of kelp so characteristic of the Peruvian coast; but it is pointed out that similar dark beds of kelp on the Californian coast give shelter to some of the most brilliant trochids and other molluscs, while green sea-weeds occur abundantly on the rocks below low-water mark on the coast of Peru. Evidently, therefore, some other explanation is required.

In a paper published in a recent number of the *Journal of Physiology* (vol. xxxix.) Dr. H. M. Vernon suggests a hypothesis of tissue respiration founded on ferment action. Dakin has shown that, in accordance with the well-known Fenton reaction, hydrogen peroxide, in the presence of ferrous sulphate as activator, is able to oxidise various amino-acids and fatty acids completely to carbon dioxide and water. Aldehydes are formed as intermediate products. Similarly in living tissues it is thought that intramolecular oxygen is taken up in the form of an organic peroxide and is transferred by the help of an intracellular peroxidase ferment to oxidisable substances. The presence of aldehyde groupings in animal tissues is strongly supported by the fact that poisons such as hydrocyanic acid, sodium fluoride and acid sodium sulphite, which are known to be capable of forming loose combinations with aldehydes, temporarily deprive the tissues of their respiratory power without necessarily doing them any permanent injury. Other poisons, such as formic aldehyde, temporarily prevent the tissues from forming carbon dioxide,

though not from absorbing oxygen. It is suggested that they act by destroying peroxidase, so that the peroxide of the tissues, in the absence of activator, can only effect incomplete oxidations.

THE study of nuclear changes and qualities in the mutants and hybrids of *Oenothera* offers a promising field of investigation. Mr. R. R. Gates, who has already contributed some papers on the subject, furnishes in the *Botanical Gazette* (September) a further account of the chromosomes in the hybrid *O. lata* × *O. gigas*. There are normally twenty-one (rarely twenty) chromosomes in the somatic cells as compared with fourteen in *O. lata* and twenty-eight in *O. gigas*. At the reduction stage half the germ-cells receive ten and half receive eleven chromosomes, but there are occasional irregularities, as when the germ-cells receive nine and twelve respectively. The author argues that this segregation is not a pairing and separation of homologous chromosomes of maternal and paternal origin, but merely a division into numerically equal groups.

ALGOLOGY has formed the subject of several papers by Mr. F. S. Collins which have been published in *Rhodora* and other American publications. In his latest contribution, that appears as vol. ii., No. 3, of Tuft's College Studies, he undertakes the ambitious task of compiling a flora of the green algæ of North America. The bulk of the species are marine algæ collected on the shores of the United States, but the author recognises that Greenland, Canada, Mexico, and the West India islands fall within his province, and includes records of fresh-water algæ so far as they exist. The work contains short diagnoses of all the species, keys to the species, genera, and families, and a figure for each genus, thus providing a serviceable handbook for American algologists, and one that is likely to attract workers to the subject. The author distinguishes two main groups, the Heterokontæ, so-called because the motile cells have cilia of unequal length, and the Chlorophyceæ. The family of Desmidiaceæ is omitted, because it is too extensive.

WE have received from Prof. Hergesell a preliminary summary account of the participation of various countries in the international kite and balloon ascents during the quarter ended June last. In addition to many places in Europe and the United States, ascents were made at Samoa and by the Greenland Scientific Expedition. The greatest altitude reached by registering balloons was 27,100 metres, at Munich on May 7. Heights of 20,000 metres and above were attained by the ascents from Glossop (Manchester), Hamburg, Strassburg, Uccle (Brussels), and Zürich. The meteorological results will be published elsewhere.

IN addition to the elaborate monthly and seasonal meteorological charts of the Atlantic and Pacific Oceans issued by the U.S. Weather Bureau, to which we have already directed attention, we have received a copy of a handy "Marine Calendar," showing for each month the average weather conditions of the North and South Pacific, the storm and hurricane signal code, and the moon's changes for 120th meridian time (besides the usual almanac). Following the calendar are tables for the conversion of time of one country to that of another to the nearest second. The calendar will be found very convenient for the purposes intended, and will further popularise the useful marine work of the Weather Bureau.

AN appendix to the report of the International Conference on Electrical Units and Standards of 1908 has just been issued. It will be remembered that the specifications of the ohm, ampere, and normal cell in the original re-

port were expressed in general terms so as to admit of modifications in details at the various national standardising laboratories. The appendix now issued contains details of the methods adopted at the National Bureau of Standards of America, at the Central Electrical Laboratory of Paris, at the Reichsanstalt at Berlin, and at the National Physical Laboratory at Teddington. References to the literature of the subject are also given, so that this appendix will prove of great use in electrical laboratories.

THE *Naturwissenschaftliche Wochenschrift*, the organ of the German Society for Popular Science of Berlin, devotes almost the whole of its issue of December 4 to the first of a series of three articles on the experimental foundations of the atomic theory, by Mr. Werner Mecklenburg. After a short historical introduction the author deals with the evidence for the existence of discrete particles in optically clear colloidal solutions, and then goes on to the kinetic theory of gases as one of the means of determining the size of the actual molecule of matter. Under this head simple proofs of Boyle's law, of the relation between mean free path and viscosity, of Van der Waals's equation, and of Loschmidt's method of calculating the radius of a molecule are given. As the method of treatment of the subject is not unlike that adopted in Meyer's kinetic theory of gases, readers of the above weekly must be interested in science to a greater extent than the public generally gets credit for being.

MESSRS. BURROUGHS, WELLCOME AND CO., of Snow Hill Buildings, E.C., have issued their exposure record and diary for 1910. This pocket-book is so well known among photographers that the chief object of this note is to inform them that the 1910 issue is now ready. It is important to point out that three editions are issued and bound in different tints, according as they are especially arranged for the northern or southern hemisphere or for the United States of America. The pocket-book itself is a mine of practical information set up, so to speak, in tabloid form, and the concentrated essence of the contents, together with the pages for entering exposure records and for a whole diary, is all enclosed in a very neatly got-up covering which will stand constant wear and tear. It must not be forgotten that a very important feature is the mechanical exposure calculator, practically the simplest efficient instrument, which is fastened inside the back cover. One turn of one scale tells the correct exposure for any subject, at any time of the day or year, in any part of the world. The writer of this note has used one of these books for several years, and finds, to his regret, that to be without his copy means a great uncertainty in giving correct exposures. Issued at a price of one shilling, it is an extremely good investment.

A NEW apparatus has recently been installed in the mechanical engineering department of the Northampton Institute for testing aeroplane models, and is described in an article, by Messrs. C. E. Larard and R. O. Boswall, in *Engineering* for December 10. The apparatus consists essentially of a carriage supported on four wheels running on a long straight track, and carrying the model aeroplane. The carriage is drawn along with increasing velocity by means of a horizontal cord, which is attached to the carriage at one end and to a large drum at the other end. The drum is rotated by falling weights, and the velocity of the carriage at any instant is obtained from a record traced on a moving strip of paper by a vibrator making five complete vibrations per second. When a sufficient velocity has been attained the model lifts, *i.e.* flight begins, and the instant at which this occurs is marked on the

strip of paper electrically. The velocity at which flight begins can thus be determined easily. The authors prefer this form of apparatus to the whirling-table method, and hope to make a series of tests on planes of varying shapes and dimensions. Experiments are now being made to determine the velocities at different angles, and also to show the manner in which the centre of pressure alters as the angle of the plane is varied. It is also proposed to instal a considerably larger apparatus than the existing one, which has a track 60 feet long at present.

THE twenty-sixth annual issue of the "Year-book of the Scientific and Learned Societies of Great Britain and Ireland" has been published by Messrs. Charles Griffin and Co., Ltd. The book has been compiled from official sources, and is intended to be a record of the work done in science, literature, and art during the session 1908-9 by numerous societies and Government institutions. In some cases the lists of papers read before societies are a little belated. For instance, it should have been possible in December, 1909, to publish the titles of papers read at the Winnipeg meeting of the British Association last summer in the place of those read in Dublin in 1908. Exhaustive though the list of societies is, it is not yet complete. Certain local geographical societies are dealt with, but the Geographical Association, with its numerous branches, receives no mention—an omission we have pointed out on a previous occasion.

OUR ASTRONOMICAL COLUMN.

DANIEL'S COMET, 1909e.—Dr. Ebell's ephemeris for Daniel's comet, 1909e, is extended to January 2, 1910, in No. 4376 of the *Astronomische Nachrichten* (p. 127, December 14), and the following is an extract therefrom:—

Ephemeris 12h. M.T. Berlin.

		α (true)	δ (true)	$\log r$	$\log \Delta$	Bright- ness
1909		h. m.	° ' "			
Dec. 21 ...	6 19° 0 ...	+45 34 7 ...	0° 20 09 ...	0° 80 22 ...	0° 92	
„ 25 ...	6 19° 2 ...	+48 15 8 ...	0° 20 32 ...	0° 81 28 ...	0° 87	
„ 29 ...	6 19° 4 ...	+50 40 7 ...	0° 20 59 ...	0° 82 55 ...	0° 81	
1910						
Jan. 2 ...	6 19° 6 ...	+52 47 8 ...	0° 20 92 ...	0° 84 04 ...	0° 74	

The elements given by Dr. Ebell show a likeness to those calculated by Dr. Becker for comet 1867 I. (Stephan), which are given for comparison; the "period" given in the latter is 40.1 ± 2.0 years. A number of observations are recorded in the same journal. On December 8 the comet was easily seen in the 8-cm. (3.2 inches) finder at the Uccle Observatory, and appeared to be of about magnitude 9.5; a nucleus of the twelfth magnitude and about 12" in diameter was seen to be surrounded by a coma which was 3' in diameter. Observers at Algiers and Arcetri on December 9 estimated the magnitude at 10.5 and 11.5 respectively.

HALLEY'S COMET.—Visual observations of Halley's comet with small instruments are now becoming common, and a number are recorded in No. 4376 of the *Astronomische Nachrichten*. Prof. Nijland reports that the comet was certainly visible in a 73-mm. finder on December 5, its magnitude being estimated as 11.0. Herr v. Buttlar, using a 3½-inch telescope on December 4, saw the comet as a nebulous mass of about 45" diameter, having a magnitude of about 11.5.

SUBJECTIVE PHENOMENA ON MARS.—In No. 4358 of the *Astronomische Nachrichten* M. Antoniadi suggested, because it is not shown on photographs, that the dark band which surrounds the disappearing polar cap on Mars is probably a subjective phenomenon. In a later number (4363) of the same journal M. Jonckheere contested the subjectivity of a band which was irregular in form and might be obliterated from the photographs by the photographic "spreading" of the image of the brilliant polar cap.

To these suggestions M. Antoniadi replies, in No. 4376,